



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

646.3014

Job Sheet 179151



Part No: 646.3014

Job Qty: 20 ea

Part Name: Blade

646.3014 S094819



Part Weight: 0 lbs

Status: Scheduled

Priority: Medium

Job Created: 6/14/18

Job Tracking No:

Due Date: 7/23/18

Created By: Marie Lajeunesse

Type: Stock

Description:

Note: DWG REV N/C SHEET 11 IPP REV:A NEW ISSUE 12/11/09 JFS VERIFY BY: JLM

Ship Via:

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup hrs	Run Hrs	Workcenter / Supplier	Lead Time	
90	Start up Operation	20 Ea			0.00	0.00	Start Up Machining-1		
100	Bandsaw	20 pcs			0.00	1.07	Bandsaw1		DAS
110	CNC Vertical Machining	20 pcs			0.63	16.12	HAAS1-1		54
120	QC	20 pcs			0.00	0.00	QC2 Machining-1		9-89
130	QC	20 pcs			0.00	0.00	QC8 Machining-1		
140	Outsource	20 pcs					MEI001-VC		
150	Packaging	20 pcs			0.00	0.00	Packaging2		
155	QC	20 pcs			0.00	0.00	QC5		
160	SprayPaint	20 pcs			0.00	0.56	Spray Paint		
170	QC	20 pcs			0.00	0.00	QC14		
180	Packaging	20 pcs			0.00	0.00	Packaging3-1		
190	QC21-SA	20 Ea			0.00	0.00	QC21		

Part Op 100 - Cut Blank at 2.670"

Descriptions: 110 - 1-Machine per folio FB150

140 - HEAT TREAT AS PER DWG, SEE NOTE #3

160 - PRIME AS PER DWG, SEE NOTE #4

180 - ***IDENTIFY AS PER APICAL MPP-120 BY STAMPING P# AND REV***

Job BOM

Part / Item	Component Name	Quantity	Operation	Container
MSTEEL-A2-B0.500X1.250	AISI A2 Tool Steel Bar, 0.500 X 1.250	4.4600 ft (.223 ea)	90-Start up Operation	

Job Allocations

Operation	Component Part	Required	Inventory	Allocated
90-Start up Operation	MSTEEL-A2-B0.500X1.250	4	46	0

Part Specifications

Spec No	Description	Target/Tolerance	Limits	Type	Special Comments
1	Blade	0.375inches ± 0.010	0.385 0.365		
2	Blade	0.940inches ± 0.030	0.970 0.910		
3	Blade	0.524inches ± 0.010	0.534		

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Suspect: _____		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Cross tube ☐ Small Fab ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐																																																																																																													
Date : _____		Step #: _____		(42) Approval																																																																																																													
Description Work Order Deviation DART Aerospace Ltd. 1270 Aberdeen Street Hawkesbury, ON K6A 1K7 CANADA TEL.: 1 813 632-5200 Email: sales@dartaero.com www.dartaeroplus.com DART AEROSPACE Container No: S094819 Part: 646.3014 Job No: 179151 Serial No/Batch: S094819 Revision: _____ Inspector: _____ Exp Date: _____ Instructions: _____ Date: 07/21/19						Completed By _____ and / Supervisor Approval Verification _____ / QA Coordinator Approval _____																																																																																																											
Root Cause <table border="0" style="width:100%;"> <tr><td>Environment</td><td>☐</td><td>No Re-verification</td><td>☐</td></tr> <tr><td>Design</td><td>☐</td><td>Operator</td><td>☐</td></tr> <tr><td>Doc/Data</td><td>☐</td><td>Offset/Setup</td><td>☐</td></tr> <tr><td>Equip/Tooling</td><td>☐</td><td>Supplier</td><td>☐</td></tr> <tr><td>Handling/Pre</td><td>☐</td><td>Training</td><td>☐</td></tr> <tr><td>Material</td><td>☐</td><td>Use for Testing</td><td>☐</td></tr> <tr><td>Internal Transport</td><td>☐</td><td>Poor Information</td><td>☐</td></tr> <tr><td>Tribal Knowledge</td><td>☐</td><td>Rushing</td><td>☐</td></tr> <tr><td>LOA</td><td>☐</td><td>Product Improvement</td><td>☐</td></tr> <tr><td>Substation</td><td>☐</td><td>Process Improvement</td><td>☐</td></tr> <tr><td>Past Expiry Date</td><td>☐</td><td>Manufacturing Process</td><td>☐</td></tr> <tr><td>Misidentified</td><td>☐</td><td>Past Due</td><td>☐</td></tr> </table>		Environment	☐	No Re-verification	☐	Design	☐	Operator	☐	Doc/Data	☐	Offset/Setup	☐	Equip/Tooling	☐	Supplier	☐	Handling/Pre	☐	Training	☐	Material	☐	Use for Testing	☐	Internal Transport	☐	Poor Information	☐	Tribal Knowledge	☐	Rushing	☐	LOA	☐	Product Improvement	☐	Substation	☐	Process Improvement	☐	Past Expiry Date	☐	Manufacturing Process	☐	Misidentified	☐	Past Due	☐	<table border="0" style="width:100%;"> <tr><td>Pressure/Forced</td><td>☐</td><td>Set-up</td><td>☐</td><td>Positioned Wrong</td><td>☐</td></tr> <tr><td>Bending</td><td>☐</td><td>BOM/Route</td><td>☐</td><td>Outside Dimensions</td><td>☐</td></tr> <tr><td>Centre Not Concentric</td><td>☐</td><td>Broken/Damage/Defect</td><td>☐</td><td>Over/Under tolerance</td><td>☐</td></tr> <tr><td>Cracks</td><td>☐</td><td>Inspection Incomplete/Unqualified</td><td>☐</td><td>Part Incorrect</td><td>☐</td></tr> <tr><td>Crimp/Kink/Ripple/Wave</td><td>☐</td><td>Contamination</td><td>☐</td><td>Part Lost/Missing</td><td>☐</td></tr> <tr><td>Cuffs</td><td>☐</td><td>Countersink</td><td>☐</td><td>Part Moved</td><td>☐</td></tr> <tr><td>Crushing</td><td>☐</td><td>Cut Too Short</td><td>☐</td><td>Drawing</td><td>☐</td></tr> <tr><td>Heat Treat</td><td>☐</td><td>Instructions Incomplete/Unclear</td><td>☐</td><td>Finish</td><td>☐</td></tr> <tr><td>Wave/Twist in Tube</td><td>☐</td><td>Drill Holes</td><td>☐</td><td>Misread</td><td>☐</td></tr> <tr><td>Marks/Chatter</td><td>☐</td><td></td><td></td><td>Turning Sequence</td><td>☐</td></tr> </table>				Pressure/Forced	☐	Set-up	☐	Positioned Wrong	☐	Bending	☐	BOM/Route	☐	Outside Dimensions	☐	Centre Not Concentric	☐	Broken/Damage/Defect	☐	Over/Under tolerance	☐	Cracks	☐	Inspection Incomplete/Unqualified	☐	Part Incorrect	☐	Crimp/Kink/Ripple/Wave	☐	Contamination	☐	Part Lost/Missing	☐	Cuffs	☐	Countersink	☐	Part Moved	☐	Crushing	☐	Cut Too Short	☐	Drawing	☐	Heat Treat	☐	Instructions Incomplete/Unclear	☐	Finish	☐	Wave/Twist in Tube	☐	Drill Holes	☐	Misread	☐	Marks/Chatter	☐			Turning Sequence	☐
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OTHER : _____																																																																																																																	

			0.514	
4	Blade	0.229inches $\pm$ 0.002	0.231 0.227	
5	Blade	1.313inches $\pm$ 0.002	1.315 1.311	
6	Blade	2.540inches $\pm$ 0.030	2.570 2.510	
7	Blade	2.395inches $\pm$ 0.010	2.405 2.385	
8	Blade	2.128inches $\pm$ 0.010	2.138 2.118	
9	Blade	0.177inches + 0.005 - 0.001	0.182 0.176	diameter
10	Blade	0.524inches $\pm$ 0.010	0.534 0.514	
11	Blade	0.569inches $\pm$ 0.002	0.571 0.567	
12	Blade	66.500Degrees $\pm$ 0.500	67.000 66.000	Angle
13	Blade	60.000Degrees $\pm$ 0.500	60.500 59.500	Angle

Plex 6/14/18 10:54 AM Dart.lajeunesse.marie

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date : _____	Step #: _____	QTY Effective : _____		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY			
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER : _____					

METCOR INC.

560 BOUL. ARTHUR-SAUVÉ, ST-EUSTACHE, QC, J7R 5A8

Tél.: 450-473-1884

Télécopieur / Fax administration: 450-491-5498

Télécopieur / Fax production: 450 491-6454

Certificat de Conformité

Certificate of Compliance

BON DE TRAVAIL order	CHARGEMENT load
329340	1

CLIENT / customer 215

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

LIVRÉ À / shipped to:

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

1

COMMANDE DU CLIENT customer po	CLASSIFICATION PIECE part classification	MATÉRIEL material	MAÎTRE D'OEUVRE prime contractor	PROGRAM
40587	N/A	A2		

SPÉCIFICATIONS DU PROCÉDÉ

processing specifications

VAC HARDEN

HARDEN AND TEMPER

EXIGENCE / requirement	SPÉCIFICATIONS / specified	TESTS EXÉCUTÉS / performed	RÉSULTATS DE TESTS / results
HARDNESS	58 - 62 HRC	5	61 - 62 HRC

QUANTITÉ quantity	POIDS weight	DESCRIPTION DES PIÈCES parts description
20	3,7	646.3014 (20) 646.3014 JOB 179151 1 BOITE DE CARTON

7/8/18

COMMENTAIRES / comments

APPROUVÉ par / Approved by:

[Signature]



DATE: 2018-08-02

DAS
38
9-89

APPROUVÉ

METCOR INC.

560 BOUL. ARTHUR-SAUVÉ, ST-EUSTACHE, QC, J7R 5A8

Tél.: 450-473-1884

Télécopieur / Fax administration: 450-491-5498

Télécopieur / Fax production: 450 491-6454

Certificat de Conformité Détaillé

Detailed Certificate of Compliance

BON DE TRAVAIL order	CHARGEMENT load
329340	1

CLIENT / customer 215

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

LIVRÉ À / shipped to:

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

1

COMMANDE DU CLIENT customer po	CLASSIFICATION PIECE part classification	MATÉRIEL material	MAÎTRE D'OEUVRE prime contractor	PROGRAM
40587	N/A	A2		
SPÉCIFICATIONS DU PROCÉDÉ processing specifications VAC HARDEN HARDEN AND TEMPER				
EXIGENCE / requirement SPÉCIFICATIONS / specified TESTS EXÉCUTÉS / performed RÉSULTATS DE TESTS / results				
HARDNESS		58 - 62 HRC	5	61 - 62 HRC
QUANTITÉ quantity	POIDS weight	DESCRIPTION DES PIÈCES parts description		
20	3.7	646.3014 (20) 646.3014 JOB 179151 1 BOITE DE CARTON		

COMMENTAIRES / comments

VAC HARDEN 1800F, 1 HR
DOUBLE TEMPER 350F, 2 HRS

Heat treatment (HT) was performed with equipment that meets the requirements of requested specification. All HT operations were performed in compliance with the required HT specification and all verifications have been performed and documented. No unauthorized changes were performed in regards to the HT. We certify that the material was manufactured, sampled, tested and inspected in accordance with the material specification and the purchase order and was found to meet the requirements.

This document and any attached documents may contain confidential or proprietary information and may be subject to export control laws and regulations. If you are not the intended recipient, you are notified that any dissemination, copying of this e-mail and any attachments thereto or use of their contents by any means whatsoever is strictly prohibited. Unauthorized export or re-export is prohibited.

Le traitement thermique (TT) a été fait en utilisant des équipements en conformité avec la spécification demandée. Toutes les opérations de TT ont été faites en conformité avec les requis de la spécification demandée et toutes les vérifications et les tests demandés ont été faites et documentés. Aucun changement n'a été faite par rapport au TT. On certifie que le matériel a été fabriqué, échantillonné, testé et inspecté en accord avec les spécifications du matériel et le bon de commande et le matériel rencontre les exigences spécifiées.

Ce document et les documents qui lui sont joints peuvent contenir des informations confidentielles, être soumis aux réglementations relatives au contrôle des exportations ou ayant un caractère privé. S'ils ne vous sont pas destinés, nous vous signalons qu'il est strictement interdit de les divulguer, de les reproduire ou d'en utiliser de quelque manière que ce soit le contenu. Toute exportation ou réexportation non autorisée est interdite.

APPROUVÉ par / Approved by:

Isabel Otero
QA Technician



DATE: 2018-08-02

METCOR INC.

560 BOUL. ARTHUR-SAUVÉ, ST-EUSTACHE, QC, J7R 5A8

Tél.: 450-473-1884

Télécopieur / Fax administration: 450-491-5498

Télécopieur / Fax production: 450 491-6454

Certificat de Conformité

Certificate of Compliance

BON DE TRAVAIL order	CHARGEMENT load
329340	1

CLIENT / customer 215

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

LIVRÉ À / shipped to:

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

COMMANDE DU CLIENT customer po	CLASSIFICATION PIÈCE part classification	MATÉRIEL material	MAÎTRE D'OEUVRE prime contractor	PROGRAM
40587	N/A	A2		

SPÉCIFICATIONS DU PROCÉDÉ

processing specifications

VAC HARDEN

HARDEN AND TEMPER

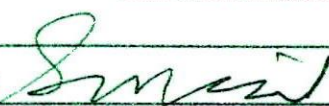
EXIGENCE / requirement	SPÉCIFICATIONS / specified	TESTS EXÉCUTÉS / performed	RÉSULTATS DE TESTS / results
HARDNESS	58 - 62 HRC	5	61 - 62 HRC

QUANTITÉ quantity	POIDS weight	DESCRIPTION DES PIÈCES. parts description
20	3,7	648.3014 (20) 648.3014 JOB 179151 1 BOITE DE CARTON

7/8/18

COMMENTAIRES / comments

APPROUVÉ par / Approved by:



DATE: 2018-08-02

METCOR INC.

560 BOUL. ARTHUR-SAUVÉ
ST-EUSTACHE, QC J7R 5A8
Tel: 450-473-1884 / Fax: 450-491-5498

Reçu de livraison

Delivery Receipt

BON DE TRAVAIL	EXPÉDITEUR	BON D'EXPÉDITION
Order	Shipper ID	Shipper
329340	1	129999

EXPÉDITION COMPLÈTE / Shipped Complete

CLIENT /Customer 215

DART AEROSPACE
1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
Ph: 613-632-5200
Fax: 613-632-1053



LIVRÉ À /Shipped To

DART AEROSPACE
1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
Ph: 613-632-5200
Fax: 613-632-1053

COMMANDE DU CLIENT	BON DE LIVRAISON DU CLIENT	TYPE DE MATÉRIEL	DATE DE LA COMMANDE	TRANSPORTEUR
Customer PO	Customer Shipper No.	Material Type	Order Date	Carrier
40587		A2	2018/7/24	CLIENT

QUANTITÉ	No. PIÈCE	NOM DE LA PIÈCE	DESCRIPTION DE LA PIÈCE	POIDS
Quantity	Part No.	Part Name	Part Description	Weight

20 646.3014 ✓
(20) 646.3014
JOB 179151

3,7

1 BOITE DE CARTON

TYPE DE CONTENEUR	# DE CONTENEURS	COMMENTAIRES CONTENEUR
Container Type	# Of Containers	Container Comments
BOITE DE CARTON	1	

CERTIFICAT

EMPAQUETAGE Packing	
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QUANTITÉ EXPÉDIÉE / Quantity Shipped : 20

POIDS EXPÉDIÉ / Weight Shipped : 3,70

QUANTITÉ RESTANTE / Quantity Remaining : 0

POIDS RESTANT / Weight Remaining : 0,00

APPROUVE

CERTIFICAT

QUANTITÉ EXPÉDIÉE / Quantity Shipped: 20

POIDS EXPÉDIÉ / Weight Shipped : 3,70

Signature:

Date:



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER **PO040587**

Supplier: MEI001-VC
Metcor Inc.
560 Boul. Arthur Sauve
Saint-Eustache
QC
J7R 5A8 Canada
Phone: 450 473 1884
Fax: 450 491 5498

PO No: PO040587
PO Date: 7/24/18
Due Date: 7/30/18
Purchase Order
Revision:
Revision Date:
Ship-To Contact: Phone:

Ship To: 1270 Aberdeen Street
Hawkesbury
ON
K6A 1K7 Canada
Phone: 613-632-5200

Via: Ground
Pymt Terms: Net 30
Freight Terms:
Special Comments:

Items

Line Item	Job	Part	Description	Status	Account	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
1	179151	646.3014	Blade Material: AISI A2 TOOL STEEL CONDITION: ANNEALED POST PROCESS: HEAT TREAT TO 58-62 Rc ROCKWELL HARDNESS	Firmed	-	7/30/18	20 pcs	0 pcs	20 pcs	\$28.41/pcs	\$568.20

20x AUG 03 2018

Grand Total: \$568.20

Order Notes

Terms & Condition of Purchasing(Suppliers) and Procurement Quality Clauses are an integral part of our AS9100 requirements. To learn in detail, please visit www.dartaerospace.com for further explanation.

Plex 7/24/18 12:45 PM dart.tsimiklis.chrisoula

CT.

DA
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